

# 10. Daily urban system of Belgrade

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The explanation of the dominant characteristics of daily urban system of Belgrade, which represents the main functional knot of the Republic of Serbia by the functional capacity as well as by the spatial range of daily interaction of people, capital and information, we have based on studying the spatial-demographic and settlement aspects of daily migrations of labour, pupils and students. Both our and previous experiences in studying the phenomenon of daily migrations of the population in Serbia have been based exclusively or in the most of the cases on the field-work researches of daily circulations of people, its territorial framework and structural characteristics. Those researches have mainly local, sub-regional and regional character. As such, they enable the partial study of smaller daily urban systems. The scientific notions on daily urban systems and their function are modest because of that and mostly imbued by 'whiteness', if it can be said so. After all, it has been stated for many times in scientific discussions that the existing theoretical and empirical notions on population migrations, and also on daily migrations in geographical studies of the settlement net (Stamenković, 1996), are partial, insufficient and mainly imprecise, as well as that their study is handicapped by the imperfection of the theory (Petrović, Blagojević, 1989). Moreover, in science, as in the European and world relations (Gottmann, 1961; Berry, 1964; Lee, Mc Donald, 2003) so in the scientific researches in Serbia, the significance and the need of studying the phenomena of daily migrations of the population and daily (local) urban systems have been emphasized for many times (Stamenković, 1998; Tošić, Nevenić, 2007). From that point of view, there are many attempts in Serbia to form the reliable enough and precisely formulated fund of the scientific notions on daily migrations of population which is primarily relevant for the theory, methodology and practice of the spatial planning (Tošić, Krunić, 2005; Tošić, Stojanović, Miletić, 2005), as well as for other areas of the social practice by researches on smaller territorial and functional-organisational units, mostly terrain, but recently also by those researches based on the special statistical results processing of the population census (Stamenković, Gatarić, 2006; Stamenković, Gatarić, 2007; Lukić, 2006; Lukić, 2007).

In recent times, starting from the 2002 census, owing to the scientific collaboration of Faculty of Geography in Belgrade with Statistical Office of the Republic of Serbia in Belgrade, through the realization of the scientific project: Migrations of the Population of Serbia according to the 2002 census results - scope, structure, spatial directions and distribution, new possibilities are opened in Serbia for more complex and comprehensive understanding of the population migration as relevant social and spatial phenomenon, and in that context of daily migrations, too (Stamenković, 2004). Hence, the data formed by a special results processing of the 2002 population census of Serbia at the Statistical Office of the Republic of Serbia, which have not been published and available to broader scientific and expert public, represent the scientific-informative basis of this chapter.

The explanation of the main characteristics of daily urban system of Belgrade has been based on the analysis of the following settlement and spatial-demographic categories:

- mass and spatial distribution (by settlements and regions) of convergent daily migration of workers, pupils and students, or absorptive daily movements of labour, schoolchildren and youth;
- mass and spatial distribution (by settlements and regions) of divergent daily migration of workers, pupils and students, or by dispersive daily movements of labour, schoolchildren and youth;
- intra-urban daily movements of workers, pupils and students on the following routes: residence-place of work, residence-place of schooling, and vice versa.

We have established that the proportion of the convergent and divergent daily movements of Belgrade is 134.415 inhabitants, whereof 95.991 inhabitants or 71.4 % are workers, while others - 38.424 or 28.6 % belong to the category of pupils and students. Within the planned and formal borders of the settlement of Belgrade, 316.817 inhabitants commute daily (235.055 workers or 74.2 % and 81.762 pupils and students or 25.8 %) from residence to place of work, from residence to place of schooling, and vice versa. That practically means that daily urban system of Belgrade, if we disregard the periodical daily migrants whose number certainly exceeds the quantum of the continuous daily migrations, includes 451.232 inhabitants who commute daily in order to work or to acquire education. Taking into consideration that fact, it is certain that Belgrade represents the leading absorptive-dispersive centre of daily migration of labour, schoolchildren and youth, also including the intra-urban daily movements as they include 39.6 % of daily migration in Serbia<sup>41</sup>.

### 10.1. General characteristics of Belgrade and its daily urban system

Belgrade is a complex urban organism which can be differently explained in demographic, physiognomic, functional and administrative sense:

- as urban tissue with considerable area in its planned and formal borders, or as the Belgrade settlement;
- as urban territory in the narrower sense to which 10 urban municipalities belong, whereof six municipalities - 126 km<sup>2</sup> (Stari Grad, Vračar, Zvezdara, Savski Venac, Rakovica and New Belgrade) get into the structure of its continuous urban territory and have the status of the urban municipalities, while four municipalities - 904 km<sup>2</sup> (Voždovac, Čukarica, Palilula and Zemun), which, as well, represent the part of its urban tissue in the planned and formal borders, have the suburban rural-urban belt of 19 independent settlements (rural, mixed and urban)<sup>42</sup>;

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<sup>41</sup> The total number of daily migrants-workers, pupils and students in Serbia without the territory of the AP of Kosovo and Metohija is 1.138.044 inhabitants.

<sup>42</sup> Beli Potok, Zuce, Pinosava, Ripanj, Velika Moštanica, Ostružnica, Pecani, Rucka, Rušanj, Sremčica, Umka, Borča, Veliko Selo, Dunavac, Kovilovo, Ovča, Padinska Skela, Slanci and Ugrinovci.

- as administrative area of (community of municipalities) the City of Belgrade, or the metropolitan administrative area of Belgrade which includes the area of 3226 square kilometres with 17 municipalities, including 10 mentioned urban and 7 other municipalities - 2196 km<sup>2</sup> (Surčin, Grocka, Mladenovac, Sopot, Barajevo, Lazarevac and Obrenovac) which are the part of the suburban belt of the Belgrade settlement with 157 independent settlements or 2.6 % of the total number of the settlements of Serbia<sup>43</sup>, whereof 14.9 % of the total population of Serbia is settled only in the Belgrade settlement.

Table 21: Total mass of daily migration in Belgrade.

Category	Workers	%	Pupils and students	%	Total	%
<b>Convergent migrations</b>	84.097	87,6	36.488	95,0	120.585	89,7
<b>Divergent migrations</b>	11.894	12,4	1936	5,0	13.830	10,3
<b>Total</b>	95.991	100,0	38.424	100,0	134.415	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

Daily interaction of Belgrade and the narrower and broader surroundings is characterized by the following relevant spatial-demographic characteristics (Stamenković, Gatarić, 2008):

- the convergent influences are territorially, settlement and demographically more expressed and prevailing (they are nine times larger than the divergent ones), because 1.6 % of the total population of the City of Belgrade participates in them in order to carry out the functions of labour or to acquire education (primary, secondary, college and university);
- the structural relationship of the convergent and divergent daily migration is 89.7 %:10.3 %;
- the structural relationship of labour, on one side, and pupils and students, on the other one, is 69.7 %:30.3 % of the convergent daily migration, while it is 86.0 %:14.0 % of the divergent one;
- the daily convergent and divergent gravitational influences of Belgrade considerably exceed the borders of the mother country, reaching many settlements, mainly larger, in the form of the lengthened spatial directions, in the broader encirclement of Serbia, on the territories of the former Yugoslav republics;
- 4.2 % of the total population of Serbia, without the Autonomous Province (AP) of Kosovo and Metohia, participates in the intra-urban daily movements of labour, school-children and youth.

## 10.2. Convergent and divergent daily movements

There are 120.585 inhabitants of the convergent daily movement, whereof 84.097 are workers and 11.894 are pupils and students. Daily migrant workers commute from

1150 settlements, while schoolchildren and youth commute from 1102 settlements on the territory of the AP of Vojvodina and central Serbia, but there are several hundreds of settlements wherefrom both daily migrant workers and pupils and students commute.

<sup>43</sup> There are 6155 independent settlements on the territory of Serbia.

Table 22: Spatial distribution of convergent daily migration of Belgrade.

Territory	Workers	Number of settlements	Pupils and students	Number of settlements	Total number of migrants	%
<b>AP Vojvodina</b>	15.301	236	9786	244	25.087	20,8
<b>Central Serbia</b>	68.796	914	26.702	858	95.498	79,2 <sup>44</sup>
<b>AP Kosovo and Metohia</b>	-	-	-	-	-	-
<b>Total</b>	84.097	1150	36.488	1102	120.585	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

The major mass of daily migrants towards Belgrade is from the settlements on the territory of central Serbia. The number of inhabitants of these daily movements is 95.498, whereof 68.796 are workers or 72.0 % who commute from 914 settlements, while 26.702 are pupils and students or 28.0 % who commute from 858 settlements. There are 25.087 migrants from the settlements of Vojvodina who realize the economic existence and acquire education in Belgrade (15.301 workers or 61.0 % and 9786 pupils and students or 39.0 %). Migrant workers commute from 236 settlements towards Belgrade (or from 50.5 % of the total number of the settlements in Vojvodina), and pupils and students from 244 settlements (or 52.2 % of the total number of the settlements in Vojvodina)<sup>45</sup>.

Most migrant workers who commute to Belgrade are from the following settlements: Borča, (8556 migrants), Kaludjerica (6065), Sremčica (4483), Surčin (3233), Nova Pazova (2567), Pančevo (2397), Ripanj (2260), Leštane (2171), Novi Banovci (1858), Dobanovci (1764 migrants), etc., whereas pupils and students from Pančevo (3044 migrants), Borča (2643), Kaludjerica (1775), Sremčica (1461), Obrenovac (1239), Surčin (999), Nova Pazova (890), Mladenovac-town (818), Lazarevac (762), Smederevo (743 migrants), etc.

Among permanent inhabitants of Belgrade 13.830 are employed in 457 settlements or they acquire education in 95 settlements on the territory of Serbia and surrounding countries. It can be claimed with considerable certainty that many migrants who commute towards the settlements in the surrounding countries and cities do not belong to the category of daily migrants, but weekly, biweekly, monthly and similar categories. What is also evident is the higher proportion of migrants whose destination of labour or education is unknown (2784 migrants - 1962 workers or 70.5 % and 822 pupils and students or 20.1 %).

Table 23: Spatial distribution of divergent daily migration of Belgrade.

Territory	Workers	Number of settlements	Pupils and students	Number of settlements	Total number of migrants	%
<b>AP Vojvodina</b>	2775	102	479	27	3254	23,5
<b>Central Serbia</b>	6843	256	553	49	7396	53,5
<b>AP Kosovo and Metohia</b>	70	24	31	7	101	0,7
<b>Other territories</b>	244	75	51	12	295	2,1
<b>Unknown</b>	1962	-	822	-	2784	20,1
<b>Total</b>	11.894	457	1936	95	13.830	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

<sup>44</sup> Taking into consideration that the 2002 population census was not realized on the territory of the AP of Kosovo and Metohia, the data on the scope and distribution of the daily population migrations towards Belgrade from this part of the territory of Serbia are unknown, but it is indisputable that the daily, weekly, biweekly and monthly migrations prevail in a considerable number, especially those of the Serbian population.

<sup>45</sup> There are 467 permanent settlements on the territory of Vojvodina

The distribution of migrant workers has been the greatest towards the following settlements: Surčin (1285 migrants), Pančevo (1173), Grocka (686), Obrenovac (600), Vinča (374), Novi Sad (356), Lazarevac (329), Barajevo (273), Stara Pazova (255), Padinska Skela (251 migrants), etc., while pupils and students: Novi Sad (325 migrants), Kragujevac (129), Grocka (77), Nis (61), Barajevo (55), Pančevo (32), Kruševac (30), Valjevo (28), Blace (26), Stara Pazova (26), Sremska Kamenica (22 migrants), etc.

### 10.3. Regional distribution of daily migrants

Both the regional structure and the prevailing spatial directions of the circulation of the convergent and divergent daily migration of labour, schoolchildren and youth are various and include considerable area. Without going into details of meso- and micro-regional scopes, considering only macro-regional aspect, we have determined six areas (regional - geographical, political - geographical, administrative, etc.), different by the size of the territory, demographic and other characteristics: the City of Belgrade, the AP of Vojvodina, Pomoravlje (Veliko Pomoravlje, Zapadno Pomoravlje and Južno Pomoravlje), District of Šumadija, other territories of Serbia and adjoining countries. These areas can be designated as settlement-territorial and regional subsystems which are most intensively connected with the urban organism of Belgrade by daily interaction of labour, pupils and students. The parts of their territories, or the areas in their geographical entirety, represent the spatial and settlement-demographic framework of daily urban system of Belgrade.

The population from the settlements located on the territory of the City of Belgrade and the AP of Vojvodina is of dominant significance in the regional structure of the convergent daily migration. The proportions are 70.9 % and 20.8 % respectively in the total daily movements towards the Belgrade settlement. The proportion of other areas in Serbia is considerably lower and it is only 8.3 % of the total convergent daily migration. As it has already been mentioned, the population of the AP of Kosovo and Metohia has not participated in these movements, which certainly is not so, but the number is unknown.

Table 24: Regional distribution of convergent daily migration of workers, pupils and students of Belgrade.

Territory	Workers	Number of settlements	Pupils and students	Number of settlements	Total number of migrants	%
<b>City of Belgrade</b>	64.031	149	21.458	151	85.489	70,9
<b>AP Vojvodina</b>	15.301	236	9786	244	25.087	20,8
<b>Pomoravlje</b>	2715	374	2987	368	5702	4,8
• <i>Veliko Pomoravlje</i>	2081	105	1724	125	3805	3,2
• <i>Zapadno Pomoravlje</i>	275	107	1052	176	1327	1,1
• <i>Južno Pomoravlje</i>	359	162	211	67	570	0,5
<b>Šumadija Region</b>	333	43	441	47	774	0,6
<b>Other territories</b>	1717	348	1816	292	3533	2,9
<b>Adjoining countries</b>	-	-	-	-	-	-
<b>Total</b>	84.097	1150	36.488	1102	120.585	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

Table 25: Regional distribution of divergent daily migration of workers, pupils and students of Belgrade.

Territory	Workers	Number of settlements	Pupils and students	Number of settlements	Total number of migrants	%
<b>City of Belgrade</b>	5645	79	199	14	5844	42,3
<b>AP Vojvodina</b>	2775	102	479	27	3254	23,5
<b>Pomoravlje</b>	704	94	173	23	877	6,3
• <i>Veliko Pomoravlje</i>	313	27	25	7	338	2,4
• <i>Zapadno Pomoravlje</i>	223	30	42	7	265	1,9
• <i>Južno Pomoravlje</i>	168	37	106	9	274	2,0
<b>Šumadija Region</b>	104	11	134	2	238	1,8
<b>Other territories</b>	460	96	78	17	538	3,9
<b>Adjoining countries</b>	244	75	51	12	295	2,1
<b>Unknown</b>	1962	-	822	-	2 784	20,1
<b>Total</b>	11.894	457	1936	95	13.830	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

It is also certain that the settlements located on the territory of the City of Belgrade (42.3 %) and the AP of Vojvodina (23.5 %) have the prevailing significance in the divergent daily movements of the population, the share of which is 65.8 % of the total divergent daily interaction.

### 10.3.1. The City of Belgrade

In the settlement net of the City of Belgrade, there are 91.333 inhabitants who circulate daily in order to realize the functions of labour or to acquire education, which comprise 67.9 % of the total daily migration of the Belgrade settlement. The share of the convergent daily migrations is 85.489 persons (93.6 %), while it is 5844 inhabitants (6.4 %) of the divergent ones. The Belgrade settlement is connected with 154 settlements on the territory of the City of Belgrade over daily population migrations. Only two villages - Prkosava and Sakulja<sup>46</sup>, located on the territory of the Lazarevac municipality, do not have daily connection with the Belgrade settlement (Stamenković, Gatarić, 2008).

The scope of the convergent daily migration of Belgrade is fifteen times larger than of the divergent one. There are 85.489 inhabitants (64.031 workers or 74.9 % and 21.458 pupils and students or 25.1 %) who commute daily to Belgrade in order to work or to acquire education (primary, secondary, college and university), whereof workers commute from 149 settlements, while pupils and students from 151 settlements. Other settlements (rural and mixed) are more active by migration towards Belgrade with 64.3 % of the total convergent daily migration in relation to the urban settlements of the City of Belgrade with 35.7 % of the total convergent daily migration of labour, schoolchildren and youth.

In order to get more complete idea about the level of spatial-demographic expressiveness of daily migrations of labour towards Belgrade, and in the deficiency of the reliable data on this social phenomenon, we cite that the present mass of daily migrations of labour is 3.2 times larger in Belgrade than the same of the 1970s in Zagreb. At that time, Zagreb was "known as the strongest gravitational centre of Yugoslavia concerning daily migrations of labour", to which "around 20.000 persons come to work" (Marković, 1972).

<sup>46</sup> The population of the village of Sakulja was moved to the territories of the Lazarevac municipality due to the expansion of the lignite strip mining («Polje D»), but in spite of that the settlement is registered at the Systematic list of settlements of the Republic of Serbia (Statistical Office of the Republic of Serbia, Belgrade, 2002) and it is statistically noted (Stamenković, 2004).

Table 26: Territorial distribution of convergent daily migration within the City of Belgrade.

Type of settlement	Workers	Number of settlements	Pupils and students	Number of settlements	Total number of migrants	%
<b>Urban</b>	21.709	17	8771	17	30.480	35,7
<b>Other</b>	42.322	132	12.687	134	55.009	64,3
<b>Total</b>	64.031	149	21.458	151	85.489	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

Table 27: Spatial distribution of divergent daily migration within the City of Belgrade.

Type of settlements	Workers	Number of settlements	Pupils and students	Number of settlements	Total number of migrants	%
<b>Urban</b>	3738	15	135	9	3873	66,3
<b>Other</b>	1907	64	64	5	1971	33,7
<b>Total</b>	5645	79	199	14	5844	100,0

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

As it has already been mentioned, the territorial framework and demographic expressiveness of daily dispersion of labour, pupils and students-domicile inhabitants of Belgrade are not highly dominant. The share of inhabitants in the divergent daily movements is 5844 or 0.5 % of the total population of Belgrade (5645 workers or 96.6 % and 199 pupils and students or 3.4 %). Workers, who mainly travel towards other settlements (rural and mixed), commute daily from Belgrade to 79 settlements, whereof 15 settlements are urban, while pupils and students, whose destinations are mainly urban settlements, travel to 14 settlements.

The number of daily migrants from the settlements of the City of Belgrade territory is different. It ranges from 11.199 inhabitants from the suburban area of Borča to only one migrant from several settlements. According to the scope and frequency of the convergent daily migration, five groups of the settlements can be distinguished on the territory of the city of Belgrade.

The group of 25 settlements stands out by its strengthened convergent daily interaction of labour, pupils and students (Borča, Kaludjerica, Sremčica, Surčin, Obrenovac, Leštane, Ripanj, Dobanovci, Vrčin, Padinska Skela, Ugrinovci, Barajevo, Mladenovac-town, Jakovo, Vinča, Boleč, Barič, Rušanj, Beli Potok, Ostružnica, Grocka, Umka, Bečmen, Lazarevac and Boljevci) wherefrom more than 1000 daily migrants commute respectively. The proportion of this group is 65.837 daily migrants or 77.0 % of the total convergent daily migration.

The group of 21 settlements is also significantly connected with the Belgrade settlement (Pinosava, Vranić, Velika Moštanica, Ovča, Ralja, Zvečka, Zuce, Guncati, Ritopek, Meljak, Zaklopača, Progar, Mala Ivanča, Slanci, Umčari, Mislodjin, Mala Moštanica, Petrović, Veliko Selo, Popović and Bačevac) out of which from 313 to 975 daily migrants commute respectively. The share of this group of the settlements is 10.533 migrants or 12.3 % of the total convergent daily migration.

The group of 39 settlements also represents the considerable daily connection with the Belgrade settlement (Mali Pozarevac, Kovacevac, Begaljica, Stubline, Ropocevo, Kovilovo, Drazanj, Bozdarevac, Vlaska, Skela, Veliki Borak, Zabrezje, Stepojevac, Pudarci, Veliki Crljeni, Sopot, Lisovic, Nemenikuće, Djurinci, Veliko Polje, Jagnjilo, Parcani, Drazevac, Beljina, Grabovac, Medjuluzje, Granice, Rvati, Rajkovac, Belo Polje, Koracica, Pecani, Rabrovac, Kamendol, Brestovik, Siljakovac, Vrbovno, Mladenovac-village and Velika Krsna) out of which from 100

to 296 daily migrants commute respectively. The share of this group is 6606 migrants or 7.7 % of the total convergent daily migration.

About 52 to 99 daily migrants commute to Belgrade from 24 settlements (Sepsin, Duvanac, Arnajevo, Senaja, Piroman, Stojnik, Amerić, Vreoci, Baljevac, Rogača, Manić, Leskovac, Rožanci, Ducina, Sibnica, Ljubinić, Trstenica, Brović, Konatice, Urovci, Krtinska, Šopic and Dren near Obrenovac). The share is 1641 migrants or 1.9 % of the total convergent daily migration.

The group of 45 settlements has the weakest intensity of the daily connection with the Belgrade settlement, wherefrom less than 50 daily migrants commute respectively, while nine settlements of this group (Stubica, Cvetovac, Strmovo, Šušnjar, Beljevac, Bistrica, Dren near Lazarevac, Burovo and Lukovica) have from one to four daily migrants. The share is 872 daily migrants or 1.0 % of the total convergent daily migration.

The most expressive daily dispersion of labour, schoolchildren and youth of the Belgrade settlement on the territory of the City of Belgrade is towards the settlements whereto more than 100 migrants commute. There are 14 such settlements (Surčin, Grocka, Obrenovac, Vinča, Lazarevac, Barajevo, Padinska Skela, Sopot, Dobanovci, Borča, Mladenovac-town, Ripanj, Barič and Jakovo) which absorb 84.7 % of the total divergent daily migration of the Belgrade settlement.

Intra-urban daily movements of labour, pupils and students – Within the planned and formal borders of the urban tissue of Belgrade, 28.3 % of the total population of the Belgrade settlement circulates daily from residence to place of work, from residence to place of schooling, and vice versa.

Among the urban municipalities of Belgrade, New Belgrade (47.004 workers), Čukarica (30.031 persons), Zvezdara (29.664 inhabitants) and Voždovac (29.466 persons) have the highest dispersion of labour, whereas Savski Venac (53.555 workers), Stari Grad (50.423 persons), New Belgrade (26.980 inhabitants) and Palilula (23.887 persons) have the highest absorption.

Table 28: Convergent and divergent daily movements of labour among the urban municipalities within the urban tissue of Belgrade.

Convergent movements	Divergent movements <sup>47</sup>										Total
	Vo	Vr	Zv	Ze	NB	P	R	SV	SG	C	
<b>Voždovac</b>		1 001	2 829	1 607	3 441	1 591	2 181	738	680	2 147	16 215
<b>Vračar</b>	2 891		2 938	1 644	3 808	1 919	1 665	814	1 118	2 394	19 191
<b>Zvezdara</b>	2 390	935		1 142	2 347	1 943	1 180	489	632	1 383	12 441
<b>Zemun</b>	1 831	685	1 720		7 344	1 247	1 334	619	726	2 008	17 514
<b>New Belgrade</b>	3 799	1 703	3 395	6 332		2 552	2 387	1 337	1 659	3 816	26 980
<b>Palilula</b>	3 219	1 547	4 328	2 176	4 816		2 109	992	1 733	2 967	23 887
<b>Rakovica</b>	716	142	394	297	656	281		169	127	1 445	4 227
<b>Savski Venac</b>	7 105	3 161	5 963	5 054	11 525	4 378	5 808		2 721	7 840	53 555
<b>Stari Grad</b>	6 146	3 280	6 757	5 273	11 029	5 747	4 114	2 234		5 843	50 423
<b>Čukarica</b>	1 162	415	981	763	1 744	757	2 214	374	320		8 730
<b>Unknown</b>	207	58	359	349	294	225	84	46	82	188	1 892
<b>Total</b>	29 466	12 927	29 664	24 637	47 004	20 640	23 076	7 812	9 798	30 031	235 055

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

<sup>47</sup> The abbreviations for the urban municipalities: Vo-Voždovac, Vr-Vračar, Zv-Zvezdara, Ze-Zemun, NB-New Belgrade, P-Palilula, R-Rakovica, SV-Savski Venac, SG-Stari Grad and C-Cukarica.



Table 29: Convergent and divergent daily movements of pupils and students among the urban municipalities within the urban tissue of Belgrade.

Convergent movements	Divergent movements										Total
	Vo	Vr	Zv	Ze	NB	P	R	SV	SG	C	
<b>Voždovac</b>		709	1659	947	2252	833	979	467	522	1218	9586
<b>Vračar</b>	685		764	234	726	497	293	256	375	375	4205
<b>Zvezdara</b>	1151	512		869	1596	917	691	300	375	920	7331
<b>Zemun</b>	451	132	476		2717	333	340	165	155	584	5353
<b>New Belgrade</b>	339	198	303	1008		327	203	150	245	447	3220
<b>Palilula</b>	1553	1341	2201	1248	3393		1046	758	1145	1641	14.326
<b>Rakovica</b>	216	27	71	45	80	35		63	19	967	1523
<b>Savski Venac</b>	1759	925	1553	1512	3270	1106	1405		921	1862	14.313
<b>Stari Grad</b>	2006	1195	2205	1860	4521	2017	1311	871		2132	18.118
<b>Čukarica</b>	307	154	287	300	606	250	641	175	128		2848
<b>Unknown</b>	149	19	156	137	152	135	40	16	43	92	939
<b>Total</b>	8616	5212	9675	8160	19.313	6450	6949	3221	3928	10.238	81.762

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

Within the intra-urban daily movements of schoolchildren and youth, New Belgrade (19.313 pupils and students), Čukarica (10.238 schoolchildren and youth), Zvezdara (9675 persons) and Voždovac (8616 inhabitants) have the highest dispersion, whereas Stari Grad (18.118 pupils and students), Palilula (14.326 schoolchildren and youth), Savski Venac (14.313 persons) and Voždovac (9.586 inhabitants) have the highest absorption.

### 10.3.2. Autonomous Province of Vojvodina

The number of daily migrants who circulate the Belgrade - the Vojvodina settlements route and vice versa, is 28.341 or 21.1 % of the total daily migration of the city (Stamenković, Gatarić, 2008).

The number of migrants of the convergent daily migration is 25.087, whereof 15.301 are workers, and 9786 are pupils and students. The number of migrants of the divergent daily migration is 3254 (2775 workers and 479 pupils and students). The proportions of these daily migrations are 0.3 % of the total population of Belgrade and 1.2 % of the total population of AP of Vojvodina, or 0.4 % of the total population of Serbia without the AP of Kosovo and Metohia.

The daily interaction of Belgrade and the settlements of Vojvodina is characterised by the following relevant spatial-demographic characteristics:

- the convergent impacts of Belgrade are territorially, settlement and demographically more expressive and prevailing;
- the structural proportion of the convergent and divergent daily migration of Belgrade is 88.5:11.5 %;
- the structural proportion of labour, on one side, and pupils and students, on the other, is 61.0:39.0 % of the convergent daily migration, while it is 85.3:14.7 % of the divergent one and
- the spatial-functional connection of Belgrade with the settlements of Vojvodina by the convergent and divergent daily migrations of labour, pupils and students is con-

siderable because the city is connected with 303 settlements of Vojvodina<sup>48</sup>, or 64.88 % of the settlements of the AP of Vojvodina is included by this interaction.

Evidently, the convergent daily gravitational area of labour, pupils and students of Belgrade on the territory of Vojvodina is territorially, settlement and spatially more expressive than the divergent one. Although Belgrade has more workers than pupils and students by the convergent daily migrations, its daily school area in the AP of Vojvodina is more spread than the area of labour because pupils and students commute daily from 244 settlements of Vojvodina, while workers from 236 settlements.

The Belgrade divergent daily area of labour, schoolchildren and students on the territory of the AP of Vojvodina includes 102 settlements whereto migrant workers commute and 27 settlements whereto daily migrant pupils and students travel.

The settlements of the convergent and divergent commuting flows are distributed in all parts of the Vojvodina province, on the territory of 45 municipalities of Vojvodina.

Most daily migrant pupils commute to Belgrade from the urban settlements in the AP of Vojvodina (59.6 % of the total convergent daily migration of pupils and students), while workers commute from other settlements (62.4 % of the total convergent daily migration of labour). The convergent daily migration of pupils is realized from 49 urban settlements, while of workers from 47 towns of Vojvodina. The population from the urban settlements of Ada, Bač, Bački Petrovac, Mol and Srbobran does not participate in the daily movements of labour towards Belgrade, while the population from Bački Petrovac, BEOČIN and ČOKA does not participate in the daily movements of schoolchildren and youth.

Table 30: Convergent and divergent daily migrations of workers, pupils and students of Belgrade by statistical types of settlements in 2002.

Type of settlement	Convergent daily migrations			Divergent daily migrations			Total migrants
	Workers	Pupils and students	Total	Workers	Pupils and students	Total	%
Urban	5755	5834	11.589	2367	461	2828	14.416
Other	9546	3952	13.498	408	18	426	13.925
<b>Total</b>	15.301	9786	25.087	2775	479	3254	28.341

Source: Special statistical results processing of the 2002 population census, Statistical Office of the Republic of Serbia, Belgrade.

Workers, pupils and students, the permanent residents of Belgrade, mostly travel regularly to the urban settlements of Vojvodina in order to work or acquire education, which comprises 86.88 % of the total divergent daily migration of the city. Daily migrant workers commute from Belgrade to 43 urban settlements, while pupils and students commute to 18 urban settlements in the AP of Vojvodina.

The intensity of daily interaction between Belgrade and the settlements of Vojvodina has diversified spatial-demographic and settlement expressiveness. The share of the convergent and divergent migrations is 10 or even fewer daily migrants from 202 settlements (43.25 % of the Vojvodina settlements). There are 674 migrants from these settlements

<sup>48</sup> On the territory of the AP of Vojvodina, 467 permanent settlements are located or 7.59% of the total number of the settlements of Serbia.

(2.38 % of the total daily migration between Belgrade and the settlements of Vojvodina). On the other side, 27.667 migrants (97.62 %) belong to the group of 101 settlements which, as well, make the daily urban system of Belgrade on the territory of the AP of Vojvodina.

Over the convergent daily migrations of labour, pupils and students, Belgrade is most intensively connected with 10 following settlements of Vojvodina: Pančevo, Nova Pazova, Novi Banovci, Stara Pazova, Indjija, Stari Banovci, Kačarevo, Opovo, Šimanovci and Novi Sad. The convergent flow of this group of settlements is 16.631 migrants, or 66.29 % of the total convergent daily migration.

The residents of Belgrade mainly commute daily to Pančevo, Novi Sad, Stara Pazova, Nova Pazova, Vršac, Subotica, Indjija, Kovin, Zrenjanin, Pećinci, Ruma, etc. in order to work or to acquire education. The divergent flow of these settlements is 2751 migrants, or 84.54 % of the total divergent daily migration.

### 10.3.3. Pomoravlje

The number of daily migrants who circulate between the Belgrade and the Pomoravlje settlements is 6579 or 4.9 % of the total daily migration of labour, schoolchildren and youth of Belgrade.

The total number of daily migrants from Pomoravlje, the largest geographic region of central Serbia - Veliko, Južno and Zapadno Pomoravlje, is 5702 migrants, whereof

2715 are workers (47.7 %), and 2987 are pupils and students (52.3 %). The distribution of daily migrant workers is realized from 374 settlements, while pupils and students from 368 settlements. The number of daily migrants from Belgrade is 877 (704 workers and 173 pupils and students), while workers commute to 94 settlements, and pupils and students to 23 settlements.

The most frequent daily migrations are from Veliko Pomoravlje, wherefrom 3805 migrants commute, which comprises 2.8 % of the total mass of the convergent daily migration of Belgrade, whereof 2081 are workers (54.7 %) and 1724 are pupils and students (45.3 %). There are 338 daily migrants who commute from Belgrade to certain settlements of Veliko Pomoravlje (313 workers and 25 pupils and students). Workers commute to 27 settlements, while pupils and students to 7 settlements.

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The more intensive daily migrations are from the territory of the Smederevska Palanka municipality where 1150 migrant workers commute from 14 settlements (Kusadak - 10 migrants, Ratari - 226, Smederevska Palanka - 141, Glibovac - 28 migrants, etc.), while the divergent daily migrations of migrant workers are mainly towards Smederevo (118 daily migrants).

There are 1327 daily migrants from Zapadno Pomoravlje, which comprises 1.0 % of the total mass of the convergent daily migration of Belgrade, whereof 275 are workers from 107 settlements (from Kraljevo - 32 migrants, Cacak - 26, etc), while 1052 are pupils and students from 176 settlements (from Cacak - 197 migrants, Krusevac - 184, Kraljevo - 104, etc). The residents of Belgrade, 265 of them (223 workers and 42 pupils and students), commute daily to several settlements of Zapadno Pomoravlje (workers to 30 settlements and pupils to 7 settlements), among which, by the scope of migration, Kruševac (28 workers and 30 pupils and students), Gornji Milanovac (39 workers and two pupils), Čačak (31 workers and 3 students), Užice (30 workers and 3 pupils and students), etc. stand out.

The total number of daily migrants from the settlements of Južno Pomoravlje, under which it is meant on Južno Pomoravlje in its broader sense, because we have adjoined Ponisavlje, Vlasina, Jablanica, Toplica and Kosovsko Pomoravlje, is 570 (359 workers and 211 pupils and students), which comprises 0.5 % of its total convergent daily migration, whereof workers commute from 162 settlements (Nis - 55 workers, Prokuplje - 18, Pukovac - 13, etc), and pupils and students from 67 settlements (Nis -29 migrants, Pirot - 24, Prokuplje - 20, etc). The number of daily migrants from Belgrade is 274 (168 workers and 106 pupils and students). Workers commute to 37 settlements (Nis - 38 migrants, Vranje - 21, Leskovac - 21, Prokuplje - 11, etc), while pupils and students to 9 settlements (Nis - 61 migrants, Blace - 26, Vranje - 10, etc).

### 10.3.4. District of Šumadija

The daily circulation of migrants between Belgrade and the settlements of the Šumadija district (2387 km<sup>2</sup> and 175 settlements) and vice versa, is 1012 migrants or 0.8 % of the total daily migration of labour, schoolchildren and youth of Belgrade.

The number of migrants of the convergent daily migration is 774 (333 workers and 441 pupils and students), while the number of migrants of the divergent daily migration is 238 (104 workers and 134 pupils and students). The distribution of the convergent daily migration of labour is realized from 43 settlements (Kragujevac - 89 migrants, Arandjelovac - 61, Lapovo - town, 47, Stojnik near Arandjelovac - 44 workers, etc), while of schoolchildren and students from 47 settlements (Arandjelovac - 186 migrants, Kragujevac - 120, Topola - town, 23, Batocina - 16 migrants, etc.). Daily migrant workers commute from Belgrade to 11 settlements (Kragujevac - 44, Arandjelovac 34, Topola - town, 12 migrants), while pupils and students commute to 2 settlements (Kragujevac 129 and Arandjelovac 5 pupils and students).

### 10.3.5. Other territories of Serbia

There are 4071 daily migrants who circulate the Belgrade - other parts of Serbia route and vice versa, which is 3.0 % of the total daily migration of Belgrade.

The share of the convergent migrations is 1717 workers and 1816 pupils and students, whereas the share of the divergent ones is 460 workers and 78 pupils and students. Most daily migrant workers commute from Šabac (129 migrants), Valjevo (98 migrants), Ub (63 migrants) and Lajkovac - town (54 migrants), while pupils and students commute

from Šabac (321 migrants), Valjevo (295 migrants) and Loznica (95 migrants). Most daily migrant workers commute to Valjevo (43 migrants), Šabac (40 migrants), Lajkovac - town (33 migrants) and Ub (28 migrants), while pupils and students commute to Valjevo (28 migrants), Šabac (7 migrants), etc.

### 10.3.6. Adjoining countries

The permanent residents of Belgrade are employed or they acquire education in the adjoining countries, i.e. in the former Yugoslav republics. The share of these daily migrations is 244 workers and 51 pupils and students, or 2.1 % of the total divergent daily migration of Belgrade: towards Montenegro (157 migrants), Bosnia and Herzegovina (94 migrants), Croatia (30 migrants), Macedonia (6 migrants) and Slovenia (8 migrants). The most frequent daily connections are towards Podgorica (57 migrants), Kotor (18 migrants), Banja Luka (13 migrants), Bijeljina (12 migrants), Nikšić (12 migrants), Cetinje (11 migrants), Zemunik Donji and Zabjani in Croatia (4 migrants each), etc.

## 10.4. Conclusions

The following relevant conclusions have resulted from many, here presented, facts, which make the starting point of our further more universal and detailed studies of the daily population migrations and daily urban systems in Serbia:

- the used data fund on the convergent and divergent daily population migrations of Belgrade and surrounding settlements, formed by the special statistical results processing of the 2002 population census, enables the reliable study of the quantity and quality of the spatial-functional relationships and connections in the settlement net, as of Belgrade so of the broader territory in its functional encirclement;
- by the scope of the convergent and divergent daily migration, which comprises 1.8 % of the total population of Serbia without the territory of the AP of Kosovo and Metohia, as well as by other important indicators (number of employed, number of pupils and students, the share in the national income, etc) of the functional significance, Belgrade represents the leading centre of Serbia which, by its absorbent and dispersive gravitational strength, influences greatly the integration and transformation of the settlements on the considerable territory;
- the daily urban system of Belgrade is spatially, settlement and demographically developed and involved into many regional directions (the Belgrade suburban; Vojvodina: Podunavlje, Srem, etc.; Pomoravlje: Velika Morava, Južna Morava and Zapadna Morava; Sumadija, etc), and also:
- it unites and connects, spatially and functionally, the considerable territory and many regional, sub-regional and local systems of settlements;
- the convergent gravitational area of labour includes 1150 settlements and 84.097 daily migrants, whereas the divergent one includes 457 settlements and 11.894 daily migrants and
- the convergent area of pupils' and students' daily migration includes 1 102 settlements and 36.488 daily migrants, while the divergent one includes 95 settlements and 1936 daily migrant pupils and students;

- the daily interaction of the Belgrade settlement (convergent and divergent) is the most developed within the City of Belgrade, especially with the settlements in its suburban belt;
- the settlements situated on the territory of Vojvodina, Pomoravlje and other regional wholes in Serbia stand out by the intensity of daily connection with Belgrade and
- the intra-urban daily migrations of labour, schoolchildren and youth on the residence-place of work, residence-place of schooling routes, and vice versa, are of special significance in the realization of the function and development of daily urban system of Belgrade in the broader sense, which have been treated, in this chapter, on the level of the general characteristics and about which we are going to discuss on some other occasion.